MISSOURI DEPARTMENT OF NATURAL RESOURCES / Geological Survey and Resource Assessment Division

The Connection

A WELL DRILLING INDUSTRY NEWSLETTER

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NEW MAPS AVAILABLE!!

The Geological Survey and Resource Assessment Division has developed a new series of maps to assist drillers working near the shore of several major lakes in Missouri. The maps were developed by Scott Kaden, a geologist in the division's Water Resources Program. The maps will aid drillers in determining if their well site is located within Area 1-B around the major lakes of Missouri. Area 1-B requires that drillers case wells 50 feet below the deepest point of the lake that is within ¼ mile of their well site. If the well site is over ¼ mile from at least 20 feet of water in the lake it is not considered to be within Area 1-B. These new maps will help the drillers determine if their well site is within ¼ mile of 20 feet of water. The maps have a line in the lake that marks the 20 foot depth contour and another line that marks the ¼ mile buffer on this line. If the well site is within the buffered area it is suggested that the driller obtain a casing depth letter from the Division (the well may be drilled without a letter as long as the driller sets the casing 50 feet below the deepest lake level). The maps are in book form (bound and laminated) and available at the Division for $30.00 per book. Shipping charges will be added to each order. The maps available are ***Bull Shoals, Lake Ozark, Norfolk Lake, Stockton/Pomme de Terre, Table Rock*** and ***Truman.***

Area 1-C Casing maps will soon be available in laminated book form.

INSIDE:

ATTENTION CONTRACTORS IN NEWTON AND JASPER COUNTIES

All new wells and old wells deepened through the Northview and/or Chattanooga Shales (also referred to as "low permeability bedrock") in Jasper and Newton counties are required to be tested for lead and cadmium (and TCE and its degradation products if within areas of TCE contamination). When sampling is done, a "chain of custody" form is required to be filled out and submitted to the lab along with the sample. BE SURE TO MAKE A COPY OF THE CHAIN OF CUSTODY FORM BEFORE SENDING OFF YOUR SAMPLE. This copy needs to be attached to your certification record and submitted along with it. NOTE: The regulations don't require that you submit the sampling results – just the chain of custody form. You should indicate to the lab that a copy of the results should be forwarded to the Wellhead Protection Section, P.O. Box 250, Rolla, MO 65402. The results can also be faxed to (573)368-2317. Failure to submit a chain of custody form within 60 days of well and pump completion will result in the issuance of a Notice of Violation.

The first year for the new Newton and Jasper counties regulations is about to end. New maps of the impact areas within the two-county region are to be available by the end of the current year. Contractors that have done business during 2000, 2001 and 2002 in Newton and Jasper counties will be sent a copy of the new impact area map. Other contractors who desire a copy of the map should call Wellhead at 573-368 2165.

WIB MEETING

The next Well Installation Board Meeting is tentatively planned for Thursday, Feb. 27, 2003, at Lake Ozark, in the Ozark Room at the Holiday Inn. This meeting will be held in conjunction with the Missouri Water Well Association Convention. The open session is scheduled to begin at 10:00 a.m.

CHARGING FOR USE OF THE DOWNHOLE CAMERA

The Wellhead Protection Section has been making use of downhole video equipment for approximately eight years. This equipment has been a big help in assessing well related problems. When the first camera was purchased, very few (if any) contractors used downhole cameras. Since that time, the number of cameras used by contractors has grown significantly.

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Charging For Use Of The Downhole Camera *continued...*

Section use of the downhole camera has dominantly been work related to proper abandonment of wells, and the investigation of well owner complaints. The camera has also been used to a limited extent to assist contractors.

In the past the Wellhead Protection Section has not charged for use of the downhole camera. However, it has come to our attention that providing this service at no cost could affect the bottom line of companies and/or individuals that offer this service for cost. To remedy this potential problem, the section has developed a policy that would allow for assessing a charge in certain situations.

Assistance with proper well construction and abandonment are an obligation of the section under the Well Drillers Act. Therefore, casework related to "postlaw" well complaints and well abandonment will continue to utilize the camera with no fee assessed. All other requests will first be referred to private industry for assistance. Contractors that have their own cameras should contact the section so their name may be placed on a list of service providers maintained by the section. Members of the public and/or contractors that require the use of a downhole camera will be provided information on camera services that are available from the private sector. If the public or contractors still want assistance we will charge a fee. This fee will be based on distance traveled (using standard mileage rates), number of staff required and time required. It will also include a "replacement cost" for the camera.

Estimated fees are as follows:

# Miles	***Cost – 1 person***	***Cost – 2 people***
100	$116.50	$179.00
200	$188.00	$288.00
300	$259.50	$397.00
400	$331.00	$506.00

HOW GOOD IS YOUR HEARING PROTECTION?

It could be argued that one of the loudest places to make a living is at the back of a drilling rig. Between the engine, compressor and hammer noise it is not uncommon to see a driller and his righ-hand(s) develop a "sign language" all their own. Unfortunately it is also not uncommon to see these same people not wearing hearing protection, or wearing a very minimal type of hearing protection. To avoid a hearing impairment, good hearing protection should be used whenever the drill is operating. If you want to see how good your choice in hearing protection is or to decide on what you should be wearing, there is a web site available. The Mine Safety and Health Administration (MSHA) has put together a sheet that details products designed to protect the hearing of workers in industries that use noisy machinery or who are in loud environments for long periods of time. The list of hearing protection products is available at MSHA's web site and MSHA has stated that it will update the site every six months. The list is in spreadsheet form and lists hearing protectors with their noise reduction ratings, model numbers, contact information, and protector types. The web site can be found at www.msha.gov/1999/hearingprotect.htm.

ALASKAN EARTHQUAKE AFFECTS MISSOURI

The large, magnitude 7.9 earthquake that struck a remote area in central Alaska on Sunday, Nov. 3, 2002, at about 4:13 p.m. had noticeable impacts here in Missouri, according to the Missouri Department of Natural Resources. Staff in the department's Geological Survey and Resource Assessment Division have received reports from citizens and from water well drillers.

Numerous wells developed muddy or cloudy water. "Large distant earthquakes can affect water levels in wells and can cause sediments in the rock and soil to be shaken and suspended in well water," said Dave Hoffman, an earthquake geologist. "Reports and records document these same phenomena from the Good Friday earthquake, a 9.2 magnitude event that took place in Alaska in 1964."

In 1964, the Geological Survey's groundwater level monitoring network had several wells where the water level fluctuated significantly. The same thing has happened as a result of the Nov. 3 Alaskan earthquake. Geologists examined data from the groundwater level monitoring network and found significant changes in water level in at least 21 of the more than 70 wells that are in the monitoring network. These wells are located in 19 different counties, primarily in southern Missouri.

Water levels went up in some wells and down in others. Changes in the water level ranged up to 2 feet. It takes only a matter of minutes for shock

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EDITOR'S NOTE

If you have any suggestions, ideas, or comments concerning this newsletter, please let us know.

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***Alaskan Earthquake** continued...*

waves to travel through the earth from Alaska to Missouri. The water level effects started between 4:30 and 5 p.m. that day.

Late that afternoon, a Harrisonville man noticed that the water in his small pond was sloshing back and forth. He did not feel the ground move and was puzzled until he heard about the earthquake. This is similar to news media reports on this earthquake from the states of Washington and Louisiana where bodies of water were also disturbed.

"Fortunately, the Nov. 3 quake did minimal damage in Alaska due to its remote location," said Mimi Garstang, state geologist and director of the department's Division of Geological Survey and Resource Assessment Division. "The occurrence should remind Missourians that we need to be concerned and prepared for the major effects of large earthquakes close to home, such as those that can be generated by the New Madrid seismic zone and other Mid-West earthquake source areas."

Understanding the nature and behavior of local earthquakes and applying that information to engineering design, construction and maintenance of man-made structures is essential to reducing the impact of earthquakes. It is the failure of man-made structures that cause most of the injuries, property damage, and economic losses that are associated with earthquakes.

Citizens can submit on-line Internet reports on the effects of an earthquake to the U.S. Geological Survey at http://pasadena.wr.usgs.gov/shake/. You can view groundwater level monitoring network data for Missouri at http://waterdata.usgs.gov/mo/nwis/current/?type=gw. Click on one of the wells. Lawrence County – Aurora is a good example of an affected well.

For more information, please contact the department's Geological Survey and Resource Assessment Division at P.O. Box 250, Rolla, MO 65402, 573-368-2144, or by e-mail at nrhoffd@dnr.state. mo.us.

THE BEST PUMP

This pump is small, self contained, and is used in a closed-pipe circuit. It resembles a double–cylinder-reciprocating pump. It has an integral variable speed electrical controller which can be operated by internal electrical circuitry or an additional external controller if necessary. These controllers may need to be replaced every five to ten years.

The units are low capacity and low head applications. These pumps typically run low capacity closed pipe systems of about 1.5 gallons. Maximum discharge rate ~ two gallons/minute. Total discharge pressure is in the range of 5.5 to 6 feet, or equal to about 2.4 to 2.6 psi at normal cycling rate of about 70 strokes a minute.

The internal design of the pump includes four check valves to prevent reverse circulation of flow. If one of the valves fail it can be replaced with a ball valve of comparable size. The units operate within a very narrow range of ambient temperature of slightly less than 100°F. Higher or lower ranges can result in failure of the unit.

When the first unit was introduced is uncertain but they have been in service for many years. The greatest numbers of these pumps are probably in Asia. Typical life span of these pumps range anywhere from 60 to 80 years but instances of 100 years have been reported.

In operation, it is essential that the internal surfaces of the reciprocating piping system be kept free from restrictions, such as "tuberculation" or "incrustation," which would tend to restrict flows and increase pressures.

Amazingly all of these features are crammed into a single package about the size of your fist that weighs only about 10 to 12 ounces. The pump is your HEART.

WELLHEAD PROTECTION SECTION PHONE NUMBER LISTING

(573)368-2165

BOB ARCHER
Section Chief
(573)368-2165
Information on legislation and enforcement. Monitoring Well Construction.

EVAN KIFER
Unit Chief—Hydrogeologic Investigation Unit
(573)368-2170
Field investigation, variances, casing depths, shallow injection well (Class V) construction standards, oil and gas well permitting.

NEOMIA ROBINSON
Unit Chief—Administrative Unit
(573)368-2174
Provides technical assistance in the area of regulations, well certification and enforcement procedures.

SHARON BEISTEL
(573)368-2168
Water well construction information and certification, location of wells and map reading information.

SHERI FRY
(573)368-2115
Permitting and testing information. Provides technical assistance in the area of regulations, well certification and enforcement procedures. Oil & Gas Council Secretary.

MARY JO HORN
(573)368-2375
General information, requests for forms, county maps, and publications.

JEANNIE HOYLE
(573) 368-2450
Well Installation Board Secretary and information regarding Notices of Violation (NOVs).

PAUL MEYER
(573)368-2159
Water well reconstruction and heat pump registration. Well plugging and field investigation.

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Wellhead Protection Section Phone Number Listing *continued...*

KATHRYN (KAY) HARRIS
(573)368-2165
Section Secretary—General information, requests for forms, county maps, publications, invoicing and fee questions.

MATT PARKER
(573)368-2195
Oil and gas well permitting, oil and gas production statistics, shallow injection well (Class V) construction standards.

JOE SCHLUETER
(573)368-2316
Abandonment registration, well plugging and field investigation.

CATHY SMITH
(573)368-2167
Casing depth information, variances on well construction and field investigation. Certification of monitoring wells.

PEGGY WENDT
(573)368-2318
Correspondence Clerk, information regarding pump information records submitted, and drought assistance well certification letters.

VACANT
(573)368-2196
Confined animal feeding operation wells, casing depth information, variances, field investigation. Certification of monitoring wells.

WELCOME

ERM\Lisa Bush
Foster Drilling\Jeff Stewart
McCarthy Construction\Larry McCarthy
Mo Dept of Natural Resources\ Wyn Kelley, Dennis Meinert
MWH Americas\Adam Newman
Ransom Heating & A/C\J T Ransom
Ratterree & Barnes Pump & Plumbing\Rodney Sutton
Riverfront Environmental\Diane Maijer
Woolard Well Drilling\T Kim Woolard

FAREWELL

Candide Directional LTD/Timothy Snyder
Xenia Corp\Hulen Lemon

REMINDER

When you fill out the Well Water Certification and Pump Information Record please remember: **White** copy goes to Department of Natural Resources, PO Box 250, Rolla, MO 65402. **Yellow** copy is for the contractor. **Pink** copy goes to the well owner.

It is important to give the pink copy to the well owner. This provides them with the needed reference number to coincide with the letters that we send to them. This is especially important when an owner has multiple wells.

Best Wishes for a Prosperous and Healthy New Year

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